macerate or mutilate the blood cells; damaged cells do no good and are a frequent cause of severe protein reactions, and reactions are to be avoided, as no patient in need of a transfusion is in condition to stand them.

Transfusions can be relatively of more use in children than in adults because it is easier to get a sufficient quantity of blood for a child.

In regard to method, I cannot agree with the statement of Doctor Cook that one should learn several methods and use the one best suited in a given case. The modern transfusion apparatus is so revolutionary and so superior to the old-fashioned pump, which churned up the blood in a glass syringe and forced it through pet cocks or ball valves, mixing it with the lubricating oil and mutilating the cells, that one need know but one method.

Especially should defibrinated blood, or citrated blood be condemned. In repeated transfusions, particularly if the same donor be used, a patient may become hypersensitive to transfused blood, showing an aphylactic shock. This hypersensitiveness may be tested for, and if found, the patient may be desensitized as in serum injections. It is, of course, difficult to positively state in a given patient that a transfusion will be or was life saving, but the results are often so brilliant that it should be done even in cases where there may be a doubt of its efficacy. Frequently a transfusion will do as much or even more for an infant than a month of special open-air treatment. While I do not consider transfusion a panacea, I do believe, when in doubt, the child should be given the benefit of the doubt and get the blood. In the present state of our knowledge we cannot state its limitations.

The blood should never come into contact with glass that is not coated with paraffin. The blood should not be longer than thirty or forty seconds out of the human body.

One should always remember that the blood is composed of myriads of delicate living cells, which if broken become merely a mass of protein.

Of course, no well known remedy should be neglected because one is using blood transfusion. Transfusions should be repeated every eight to ten days, unless contraindicated. As a general rule an infant can be given the necessary amount of blood in five to eight minutes.

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E. P. Cook, M. D. (Sainte Claire Building, San Jose).—We cannot have the subject of blood transfusion brought to our attention too forcibly or too frequently. Its value in the various conditions stated by Doctor Rothman is beyond question even though it may be difficult of exact statistical research. Those who have had experience in its use have a very positive feeling regarding its value. I should like to emphasize the anemias as giving one of the most frequent indications. Anemia is an almost constant finding in our malnourished babies and those presenting a difficult feeding problem. The giving of blood in amounts of 100 to 150 cubic centimeters two or three times, at intervals of ten days, will result in an increase of two million red cells.

I should also like to mention shock as another indication; and by shock I mean not only the traumatic and surgical variety, but also the newer conception of medical shock which accompanies pneumonia, the acute infections, and diabetic coma.

It is my belief that unless one has the understanding coöperation of a surgeon that pediatricians should be prepared to perform their own transfusions. It is a therapeutic procedure, the technique of which we can easily master, and if we will continue alive to its possibilities and be prepared to do it ourselves we are making a distinct advance in our therapeutics.

A recently encountered complication, unusual and interesting, is worthy of mention. An infant of ten months was given an intraperitoneal transfusion of 120 cubic centimeters of citrated blood. On the morning of the fourth day following, a sausage-shaped tumor mass was noted extending from the right external inguinal ring to the lower portion of the scrotum. Investigation revealed this to be a hematocele of the transfused blood. It may be difficult to differentiate such a condition from a strangulated hernia, because this one was irreducible, did not transmit light, presented an impulse on coughing, and caused no discoloration of the skin of the scrotum.

Doctor Rothman wisely refrains from advocating any particular method. Let us become familiar with several and choose the one best adapted to the individual case. I like particularly his statement that "mauling a small infant for an hour or more in order to give a few ounces of blood is often more detrimental than beneficial."

FUNCTIONAL DISORDERS VERSUS ORGANIC HEART DISEASE IN CHILDHOOD*

REPORT OF CASE

By Alfred Hamlin Washburn, M. D.
Denver, Colorado

Discussion *by A. J. Scott, Jr., M. D., Los Angeles; Harold K. Faber, M. D., San Francisco; Edward B. Shaw, M. D., San Francisco.*

In growing children, from infancy through adolescence the occurrence of either subjective symptoms or actual physical signs referable to the heart is relatively common. In the children's heart clinic of the University of California Hospital the author sees a good many children in the course of a year who have no organic heart disease and yet who present some symptom or physical finding which has been interpreted as being dependent upon cardiac disease. Occasionally patients are seen with rheumatic heart disease in whom no organic heart disease has been suspected. This paper will discuss the differentiation between organic disease and functional disorders of the child's heart.

To say that our first duty is that of diagnosis is a type of truism which even medical students resent, but I shall try to show that diagnosis, prognosis and actual treatment are so closely linked together as to make it necessary to be treating, diagnosing and working out a reliable prognosis all at the same time. Unless one considers: first, congenital cardiac defects; second, acquired organic heart disease (which is almost always of rheumatic origin); and third, functional disorders, in every patient with cardiac symptoms, one will surely fail in meeting the first obligation, that of diagnosis.

Patients who have had an acute rheumatic arthritis or chorea associated with an acute carditis with the resultant valve damage, offer little real difficulty in diagnosis. The treatment for such cases has been so thoroughly described in textbooks and journals as to relieve me of the necessity of discussing it here. Similarly patients who present a story of cyanosis since birth with loud heart murmurs offer no great problem ex-

*From the Department of Pediatrics, University of California Medical School, and the Children's Heart Clinic, University of California Hospital Out-Patient Department.

*Read at San Francisco County Medical Society, May 6, 1930.

cept as to what particular congenital defect of the heart may be present. This discussion is chiefly regarding those borderline cases which reveal no characteristic story of rheumatic fever, no definite evidence of cardiac abnormalities during early infancy and yet present symptoms or signs of heart disease. To those who examine children frequently, this borderline group is larger than either the frank rheumatic or the typical congenital groups. With the hope of making my ideas directly applicable to practice, I have selected one record from my heart clinic files and shall build my argument around this case. I have chosen this particular boy, not because his is an unusual case, but rather to illustrate the type of problem we meet many times a year.

REPORT OF CASE

This patient, R. M., a boy of eight years, was first seen in October 1926, complaining of almost constant fatigue and occasional breathlessness on exertion. There was nothing of importance in his family history. He had been a normal healthy baby and had had no diseases other than occasional "colds" up to seven months previous to his first clinic visit. At that time he was taken acutely ill with fever, sweating, pain in his chest and extremities, and rapid, labored, breathing. There had been no tenderness, swelling or redness of any joints, but fleeting aches and pains in the extremities and severe pain in the left side of his chest. He recovered from these acute symptoms in about ten days and was allowed up on the fourteenth day. During the first month thereafter he complained so much of fatigue that a doctor was consulted. A diagnosis of heart disease was made and some medicine was prescribed. (On subsequent examination this proved to be tincture of digitalis.) No advice was given as to diet, exercise, rest, or any other changes in his daily regimen, nor was any explanation given the mother as to the nature of his heart trouble or its possible consequences. In the six months which had elapsed since that time he had shown only slight improvement with no gain in weight, marked fatigue by the end of the day, and a lack of the normal energy and enthusiasm of an eight-year-old boy. Occasionally he had complained of fleeting pains in his legs or arms, but there had been no other specific symptoms noted.

Examination revealed a well-developed boy who looked a little pale and thin and who sat in the typical posture of fatigue. His tonsils were of moderate size with crypts, scars and adhesions pointing to previous infection. There was a small amount of postpharyngeal exudate, but no sign of any acute infection in his upper respiratory passages. There were a number of teeth showing caries with secondary infection. Several anterior cervical lymph nodes were slightly enlarged, but not tender. The only other positive findings were referable to his heart. No enlargement was made out by palpation or percussion, the point of maximum impulse being visible and palpable 1.0 centimeter inside the nipple. The sounds were of fairly good quality, but not so loud nor so clear-cut as might be expected in a normal healthy boy of eight years with a thin chest wall. The second sound at the pulmonic area was louder than at the aortic area, but not accentuated. In the upright posture there was heard a loud roughened blowing murmur which occupied most of systole. It was loudest at the apex but well heard over the entire precordium and for a short distance toward the axilla. His heart rate was 88 and the rhythm regular except for a mild degree of sinus arrhythmia. A simple exercise tolerance test showed an increase in rate from 88 to 118 with a return to the initial level in two minutes—that is, his response to mild exercise was normal. To summarize, here was an eight-year-old boy who had been in good health until the onset of his present illness when he had developed chronic fatigue, fleeting pains, and breathlessness following an acute infection of unknown origin. The presence of chronic infection in tonsils, adenoids and teeth, and a loud rough systolic murmur in this pale, tired-looking boy completed the picture.

A casual impression was that here was a case of rheumatic fever in which the microörganism (be it streptococcus or not) had gained access to the body through the tonsils, attacking the heart seven months previous to his first visit to the clinic and leaving him with a rheumatic endocarditis involving the mitral valve. His subsequent fatigue, breathlessness, and fleeting pains would all seem to fit into this rheumatic picture. However, a more careful analysis suggested that we had to consider other possibilities. All of his symptoms and signs might be explained on quite a different basis. Assuming that his acute infection had been pneumonia which was followed by some smouldering infection in his tonsils and adenoids, then his symptoms might be thought of as due first, to the toxic effect of his respiratory tract infection upon his heart muscle, and second, to a very inadequate convalescence which left his heart muscle tone so poor as to allow a relative mitral insufficiency. Such an explanation would have necessitated a diagnosis of functional disorder.

To complete the differential diagnosis, we had to consider the possibility of a congenital defect. The patient had never been examined by a doctor until after his acute illness seven months before his first visit. The lack of any marked cardiac enlargement with so loud a murmur is surely in favor of congenital rather than an acquired organic lesion with which one has a right to expect the usual sequence of dilatation and hypertrophy. Moreover, there was no story of characteristic rheumatic symptoms. However, such a diagnosis will hardly explain any part of the picture except the murmur and even that is more characteristic of a mitral regurgitation. Consequently the possibility of a congenital defect was placed in the background and the chief problem was considered to be a differentiation between rheumatic carditis and a functional or relative insufficiency of the mitral valve dependent upon a weak heart muscle.

COMMENT

By functional heart disease I mean any disturbance of the heart which is not caused by a demonstrable organic lesion. This term may thus include such symptoms as breathlessness, palpitation, pain and fatigue of cardiac origin or any variations from the normal rate, rhythm and sounds of the heart. A great many murmurs are produced by relative valvular insufficiencies. As typical of these one might mention, (1) those occurring in the course of an acute infection, presumably dependent upon dilatation; (2) those following acute or chronic infections which may be due to either long-continued overwork or the direct action of toxins on the heart muscle; (3) so-called hemic murmurs, which are probably the result of an anemic heart muscle giving poor tone with relaxed ring and insufficiency of the valve; and (4) the murmurs associated with generalized muscular weakness as in severe malnutrition or a prolonged exhausting illness.

The other large group of functional disorders, which are concerned with variations in rate and rhythm, may be due to similar extracardiac diseases but are very frequently on a psychogenic basis. Premature beats, instability of rate, exaggerated sinus arrhythmia, and even paroxysmal tachycardia in childhood may be dependent upon a psychological disturbance which is not in itself

a prominent enough part of the picture to be noted unless one is on the lookout for it. We have had many interesting patients of this type in whom we feel that there is an essential instability of the nervous system as evidenced by such outward signs as easy blushing, nervousness, a tendency to emotional instability and frequently great mental alertness or even precocity. It is in patients presenting such a background that we are most likely to find these functional disturbances of rate and rhythm. I think I have said enough to indicate that in functional heart disorders we must look upon the heart as a mirror in which we may see, if we examine it intelligently, the reflection of trouble elsewhere in the body. It may be a chronic infection, an anemia, an inadequate convalescence from an acute infection, or some psychological upset which is the primary cause of the disorder. To treat these patients satisfactorily one must do a thorough job at diagnosing, not simply their cardiac condition, but its cause.

DIFFERENTIATION BETWEEN RHEUMATIC AND FUNCTIONAL HEART

To return to our little patient, we have the problem of differentiating between a rheumatic or a functional heart disease. The situation in this case is quite typical of the uncertainty involved in handling this whole borderline group. A tentative diagnosis of rheumatic carditis with mitral valve involvement was recorded. The question of prognosis, which is of such vital importance to the parents, was handled by telling the boy's mother that he had a leaky heart valve which might be much improved by proper treatment, faithfully carried out. The only way I know of handling this is by a patient, thoroughgoing explanation about heart diseases and how to handle them, given in such simple terms that the layman can grasp them. To be an alarmist in making a prognosis is to run the danger of making an invalid out of a youngster who, if properly handled, may eventually have a heart of normal efficiency. If one talks about heart disease in front of the patient, one must take pains to convey the impression that the prognosis is good only if the outlined regimen is carefully followed.

The means by which we may reach the correct diagnosis and a sane prognosis are the same and very fortunately include treatment. The patient's reaction to the prescribed regimen gives valuable information about both of these other problems. People who think of treatment only in terms of medication are apt to say that we do not carry out any therapy at our children's heart clinic. On the contrary our treatment of such children as the one under discussion takes a great deal more time and patience than the mere writing of prescriptions. To either diagnose or treat a youngster with any form of heart disease without first making an adequate explanation to the child and parent and second, regulating his daily regimen in accordance with the tolerance of his heart for activity, is a dangerous procedure. The only safe measure is to familiarize oneself with the patient's entire twenty-four hours regimen. When does he rise in the morning? How soon does he eat breakfast? What does he eat and how long does it take him to eat? How soon after breakfast does he start to school? How far does he have to go, how much walking is involved and whether uphill or not? By examining the whole twenty-four-hour period one gains an adequate idea of the child's average amount of rest and activity. A schedule must then be worked out which gives the maximum amount of rest which the particular child may need. By watching the result of the original arbitrary schedule, one may then add either more rest or a gradual increase in activity as the case demands. Rest is the greatest single therapeutic measure in heart disease. Gradually increasing activity is almost equally important in the growing child since both are needed in order to produce a strong heart muscle with normal function.

The tentative diagnosis of rheumatic heart disease in this patient necessitated (1) the outlining of a sensible regimen, (2) the removal of foci of infection, and (3) careful and repeated observations of his progress in order to establish the correct diagnosis. If there had been any fever or other evidences of activity of infection, such as rapidity of pulse, joint symptoms, chorea, or subcutaneous nodules, absolute bed rest would have been prescribed. As it was, the boy was limited to half a day in school with two hours bed rest after the noon meal. His afternoon activity was very limited at first, but then increased gradually. The simplest guide for parents is the avoidance of fatigue. If the child shows dyspnea or palpitation after exertion or fatigue at the end of the day, it must be assumed that he has gone beyond the tolerance of his heart for exercise. In this patient we were able to increase his activity rapidly enough so that in two months he was playing games with other boys without any untoward symptoms resulting therefrom. However, he was still receiving added rest in bed in the middle of the day. During these two months he gained a pound and a half in weight. Since it has been shown that weight gain, increasing tolerance for exercise and increasing vital capacity of the lungs all give parallel curves upward in a patient whose cardiac function is increasing, we felt justified in accepting the boy's weight gain and rapid increase in tolerance to exercise as a good sign and one which favored the diagnosis of a relative insufficiency rather than an organic mitral disease. Children with rheumatic valvulitis who are showing cardiac symptoms rarely improve so rapidly on such a regimen. Meanwhile his dental caries had been attended to and the patient felt much better. His only complaint was an occasional fleeting pain in his arms or legs. His heart sounds were definitely improved in quality, while the murmur was considerably softer.

Since our impression now was that we were dealing with a functional disorder, both the boy and his mother were given a more optimistic view and encouraged to continue the regimen as outlined. Although his tonsils were neither very large nor severely infected, their removal seemed indicated whether he had a rheumatic infection

in which the tonsils might serve as a portal of entry or a functional disorder in which absorption of toxins from this focus of chronic infection might hinder the return to normal heart function. Therefore tonsils and adenoids were removed under a general anesthetic. His convalescence was entirely uneventful. His improvement in general well-being, his increase in weight and his tolerance for exercise all continued to show steady gain, month by month. One year after tonsillectomy he appeared to be a normally healthy active boy. Examination of his heart in the upright posture revealed normal heart sounds without any murmur. On lying down the faintest systolic blow was audible at the apex. Six months later no murmur was heard in any posture or even after strenuous exercise. For the past year and a half he has remained in good health without any symptoms or signs referable to his heart.

DIFFERENTIAL POINTS IN DIAGNOSIS OF FUNCTIONAL HEART DISORDER

I felt perfectly safe in making a final diagnosis of functional heart disorder with relative mitral insufficiency relieved by regulation of the patient's daily regimen plus removal of his foci of infection. In looking back over the whole case the following points seem to be strong evidence against a rheumatic infection: (1) The symptoms of the original acute illness were more like those of pneumonia and pleurisy than a carditis and the recovery was too rapid for a rheumatic heart infection of sufficient severity to give so loud a murmur seven months later; (2) his normal exercise tolerance test on the first visit was unusual for a rheumatic heart case which was severe enough to give symptoms; (3) his improvement was too rapid, especially his rapidly increasing tolerance for activity; (4) the lack of cardiac enlargement at any time is a potent argument against rheumatic carditis; (5) the diminishing in the intensity of the murmur during the first six months might have been consistent with an improving rheumatic heart, but not its complete disappearance in a year and a half; (6) the lack of recurrence of any single part of the rheumatic syndrome over a four-year period from eight to twelve years is unusual in a child who has had a severe rheumatic heart involvement.

I have purposely avoided saying anything about either x-rays or electrocardiographs. I am well aware that there are times when these aids to diagnosis are of extreme value, but I believe they should occupy a secondary position in the handling of children with heart disease. Many times patients are needlessly charged for expensive diagnostic tests while careful obtaining and analysis of the clinical picture as well as prolonged observation—things which are absolutely essential to both diagnosis and treatment—are neglected. In this patient an x-ray, taken two months after his first visit, showed an almost normal heart shadow, the only possible variation being a questionable slight enlargement to the left with a left border which was rather straight. A subsequent x-ray was reported as normal a year later. The cardiograph revealed a slight slurring of the R-waves in leads 1 and 2 and rather high R-waves in leads 2 and 3. Two years later it was reported as normal. These procedures added very little to the clinical picture in the case. After every possible bit of information has been gained by accurate history taking, by careful and repeated examinations, if there is any doubt about the diagnosis or the findings which might affect the course of treatment prescribed, then certainly x-rays and electrocardiographic tracings should be obtained. In many cases they are of more educational value to the physician who is studying heart disease than they are of practical benefit to the individual patient concerned.

MEDICATION

I have also neglected to say anything in regard to medication. Digitalis is not a cure-all for disorders of the heart. The patient under discussion had been given digitalis although no other therapeutic measures had been advised. Digitalis is given too often to such children, but when it is given to those who really need such medication it is rarely given in sufficiently large dosage. Time forbids any complete discussion of digitalis therapy in childhood, but because it was given without any good reason in this patient I am tempted to list the chief indications: (1) congestive heart failure; (2) auricular fibrillation; (3) persistent tachycardia; and (4) occasionally in children who show a persistently high or increasing heart rate with evidences of early insufficiency following acute carditis—that is, in patients who are verging on congestive failure in spite of complete bed rest. Auricular fibrillation and persistent tachycardia are not common in childhood. Even cardiac decompensation with congestive failure is a comparatively unusual occurrence before the age of twelve years. Consequently digitalis is rarely indicated in the group of little cardiac patients who come to the physician's office or a clinic.

COMMENT

I hope I have made it clear that such children as the boy here described deserve a most painstaking investigation of their whole history, their physical condition, and their daily regimen before any diagnosis is made and before any prescriptions are written. When this is done it will often be quite apparent that what they need is not digitalis or any other medicine, but (1) the removal or relief of some underlying disease, such as a focus of infection, an anemia, or an intolerable psychological situation, and (2) a common-sense overhauling of their mode of living to the end that they receive adequate rest first of all, followed by a gradual increase in activity.

In closing I should like to reiterate that the proof of the efficacy of treatment is a purely pragmatic one. If the rest is adequate and the allowed activity well adjusted to the capacity of the heart, then the child will gain weight, increase his tolerance for exercise, show improvement in his heart and have no cardiac symptoms. It is always astonishing to see how many of these

children will coöperate splendidly in carrying out such a regimen if only the physician will take the time to explain the rationale of the treatment with simple diagrams and similes and in words which the child can understand. You cannot hope for ultimate success in treating children with either rheumatic or functional heart disease unless you attempt some sort of education both of parent and child so that the child will learn to regulate his own rest and activity to suit the tolerance of his individual heart when he is no longer under medical supervision.

University of Colorado School of Medicine.
The Child Research Council.

DISCUSSION

A. J. Scott, Jr., M. D. (1401 South Hope Street, Los Angeles).—Doctor Washburn's paper has some points I wish to stress.

First: The importance of a careful history of all children to be examined for real or suspected heart disease. If we are in a hurry or have to secure the history from a garrulous parent, time and patience may be required to get the essential facts.

Second: The physical examination requires all technical points to be carefully correlated to the history. I agree with Doctor Washburn regarding the nonnecessity of x-rays and the electrocardiograph in the majority of cases. Too often dependence is placed on these laboratory aids rather than on history and careful physical study. In auscultation we use a bell stethoscope with a soft rubber collar which fits the child's chest better than a rigid bell. This shuts out outside sounds, limits the quality of the underlying sounds to the more typical tones.

In children basal murmurs are usually due to some congenital lesion, or from pressure on blood vessels by adjoining structures which may be enlarged. In this latter condition the quality of the murmur changes with change of the child's position. In the congenital lesion other signs are usually associated.

Rheumatic lesions are rare in children under five years old. In children over five years an apical murmur has definite significance. A soft systolic blow, not transmitted is usually functional. It increases or decreases with change of position and, as we have found, may be heard at one examination and be absent at a later time. The child Doctor Washburn has described has a borderline type of murmur which might readily be considered as due to a crippling of the mitral valve. His careful study and observation of the child brought out the true condition. The child was made a useful member of society where otherwise he might have been a "mental" cardiac cripple.

I wish to emphasize what has been said regarding diagnosis and prognosis. Rest is important. Exercise, as it can be tolerated, must be instituted. The psychology of the child must not be overlooked and optimism must permeate everything said and done. Parents must be educated regarding the exact nature of the child's heart condition so that they may cooperate and not hinder the physician in his treatment. Children have been harmed unwittingly and unnecessarily who had only a functional murmur because the growing child's heart and the normal sounds for the various ages have not always been recognized.

Medical students must be taught what is normal in a child's heart before they are taught what are abnormal sounds. What may be an abnormal sound in an adult may be a normal sound in a child.

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Harold K. Faber, M. D. (Stanford University Medical School, San Francisco).—I am particularly impressed with Doctor Washburn's discussion of the significance of cardiac murmurs in childhood. The pendulum of opinion regarding them is swinging back again to a mid-position. From the early days of stethoscopy when all murmurs were interpreted as evidences of pathology, we have seen it veer about to a belief that most systolic murmurs in childhood are "functional" and of no significance. Such a view is obviously obscurantist. Every murmur has a cause and it is desirable to ascertain that cause, or at the least to determine its relationship to the patient's condition. Sometimes this is impossible, but frequently a reasonable surmise can be made. The term "functional" is misleading, implying as it does that no organic pathology or pathological physiology exists; and the term "accidental" is even worse, implying an entire absence of causation. It is a much sounder view that every murmur is due to some pathological disturbance, the seriousness and permanence of which remain to be determined. In many instances such disturbances are, of course, transient; in others, while not transient, they are not of serious import; in still other instances, such as Doctor Washburn mentions, they may be early evidence of serious and lasting disease. The casual dismissal of murmurs as of no significance, therefore, is unjustified and dangerous, and constitutes a neglect of the physician's duty to his patient. Painstaking study of each patient, as Doctor Washburn has recommended, is the only method which safeguards the patient's interests.

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Edward B. Shaw, M. D. (University of California Medical School, San Francisco).—Our chief concern in the handling of cardiac conditions in childhood is not with the heart, but with the patient. Too often in our concern over the minuti of physical examination—murmurs, deviation from normal in the electrocardiogram and x-ray—we lose sight of the patient's general well-being. There is no question, of course, with regard to the patient with abnormal heart findings who consistently has an elevation of temperature and pulse; this patient belongs in bed whatever final diagnosis may be arrived at with regard to his cardiac condition. One sees many patients, however, who on physical examination are found to have murmurs which it is hard or impossible to differentiate from those caused by organic lesions but whose general physical condition is perfectly normal in that they are free from fever, tachycardia, breathlessness and increased fatigability, who seem to be, apart from their heart murmur, perfectly normal children. One should, of course, attempt to arrive at a precise diagnosis, but to restrict exertions beyond the avoidance of extreme fatigue is a mistake. It is usually unwise to characterize these patients as having heart disease, as this often leads to a mistaken apprehension on the part of the parents and an unwholesome coddling of a child who is perfectly well able to take full part in the struggle for existence. It is needless to say that this does not preclude every attempt to eliminate obvious foci of infection or defects of hygiene and nutrition. Many borderline cases require and should have repeated observations over a period of months. A certain amount of deliberation in arriving at a diagnosis is well justified, but this period should be energetically devoted to the general upbuilding of the patient.

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Doctor Washburn (Closing).—I am very grateful for the discussions of Doctors Faber, Scott, and Shaw. While I am in complete agreement with Doctor Shaw that our chief concern should be with the patient as a whole rather than with the heart alone, yet I am anxious to restate this fact in a different way. Doctor Faber says that "it is a much sounder view that every murmur is due to some pathological disturbance." These two statements may be made consistent if we say that every cardiac abnormality points to some pathological disturbance somewhere in the child and that only by considering such children as complete individuals rather than simply as cardiac patients may we hope to find the source of the trouble and administer adequate treatment.